

WHAT IS CLAIMED IS:

- 1 1. An electric heating/warming composite fabric article, comprising:
2 a fabric layer having an inner surface and an outer surface,
3 a barrier layer disposed at said inner surface of said fabric layer, said barrier layer
4 having an inner surface and an outer surface, and
5 an electric heating/warming element comprising a flexible, electricity-conducting
6 film, the element disposed between said outer surface of said barrier layer and said inner
7 surface of said fabric layer, the heating/warming element being adapted to generate
8 heating/warming when connected to a power source.
- 1 2. The electric heating/warming composite fabric article of claim 1, wherein said
2 electric heating/warming element is disposed upon said outer surface of said barrier layer.
- 1 3. The electric heating/warming composite fabric article of claim 1, wherein said
2 outer surface of said barrier layer is secured at least adjacent to said inner surface of said
3 fabric layer.
- 1 4. The electric heating/warming composite fabric article of claim 2, wherein said
2 outer surface of said barrier layer is secured upon said inner surface of said fabric layer.
- 1 5. The electric heating/warming composite fabric article of claim 1, wherein said
2 electric heating/warming element is stretchable.
- 1 6. The electric heating/warming composite fabric article of claim 1, wherein said
2 fabric layer is hydrophobic.
- 1 7. The electric heating/warming composite fabric article of claim 1, wherein said
2 fabric layer is hydrophilic.

- 1 8. The electric heating/warming composite fabric article of claim 1, wherein said
2 barrier layer is micro-porous hydrophobic.
- 1 9. The electric heating/warming composite fabric article of claim 9, wherein said
2 barrier layer is nonporous hydrophilic.
- 1 10. The electric heating/warming composite fabric article of claim 1, wherein said
2 barrier layer is nonporous hydrophilic.
- 1 11. The electric heating/warming composite fabric article of claim 1, wherein said
2 barrier layer is formed of poly urethane.
- 1 12. The electric heating/warming composite fabric article of claim 1, wherein said
2 barrier layer is formed of poly tetrafluoroethylene (PTFE).
- 1 13. The electric heating/warming composite fabric article of claim 1, wherein said
2 barrier layer is resistant to passage of air and water droplets and permeable to water
3 vapor.
- 1 14. The electric heating/warming composite fabric article of claim 1, wherein said
2 electric heating/warming element is washable, non-swelling and hydrophobic.
- 1 15. The electric heating/warming composite fabric article of claim 1, wherein said
2 electric heating/warming element is resistant to stiffening and cold crack.
- 1 16. The electric heating/warming composite fabric article of claim 1, wherein said
2 electric heating/warming element has resistivity in the range of about 100 (1×10^2) ohm-
3 cm to 0.000001 (1×10^{-6}) ohm-cm.
- 1 17. The electric heating/warming composite fabric article of claim 1, wherein said
2 electricity-conducting film comprises synthetic resin.

1 18. The electric heating/warming composite fabric article of claim 18, wherein said
2 electricity-conducting film further comprises conductive particles.

1 19. The electric heating/warming composite fabric article of claim 19, wherein said
2 conductive particles comprises at least one of silver and graphite.

1 20. A method of forming an electric heating/warming composite fabric article,
2 comprising:

3 providing a fabric layer having an inner surface and an outer surface and a barrier
4 layer having an inner surface and an outer surface,

5 applying an electricity-conducting paste upon the outer surface of the barrier layer
6 in a predetermined pattern of an electric circuit,

7 joining the inner surface of the fabric layer to the outer surface of the barrier
8 layer, and

9 curing the electricity-conducting paste to form an electric heating/warming
10 element of a flexible, electricity-conducting film defining an electric circuit upon the
11 outer surface of the barrier layer, the electric heating/warming element being adapted for
12 connection to a power source, thereby to generate heating/warming.

1 21. The method of claim 20, wherein, during the step of curing, the electricity-
2 conducting paste is cured to form a stretchable film defining the electric circuit.

1 22. The method of claim 20, further comprising a step of incorporating the electric
2 heating/warming composite fabric article into an article of apparel.

1 23. The method of claim 22 wherein the article of apparel is one of a jacket, a
2 sweater, a hat, a glove, a shirt, pants, a sock, a boot, and a shoe.

1 24. The method of claim 20, further comprising a step of incorporating the electric
2 heating/warming composite fabric article into a home furnishing textile article.

- 1 25. The method of claim 24 wherein the home furnishing textile article is one of a
2 blanket, a throw and a seat warmer.
- 1 26. The method of claim 20, further comprising a step of connecting the electric
2 heating/warming element to a power source, thereby to generate heating/warming.